

Sheet 3-DSS

1- Explain the following terms:

OLAP- Data warehouse- MIS- Operations research- Data Mining

2- How DSS tools are used for seeking a solution or making a decision?

Answer:

- What-if Analysis
 - End user makes changes to variables, or relationships among variables, and observes the resulting changes in the values of other variables
- Sensitivity Analysis
 - Value of only one variable is changed repeatedly and the resulting changes in other variables are observed
- Goal-Seeking
 - Set a target value for a variable and then repeatedly change other variables until the target value is achieved
- Optimization
 - Goal is to find the optimum value for one or more target variables given certain constraints
 - One or more other variables are changed repeatedly until the best values for the target variables are discovered

3- The use of scenarios is becoming popular in computerized decision making. Why? What are the most interesting scenarios?

Because

- Scenarios provide flexibility in planning.
- Help validate major assumptions used in modeling
- Help to check the sensitivity of the proposed solutions to changes in the scenarios.
- The high graphical capabilities of computers.
- The high computation capabilities of computers.

Most interesting scenarios:

- The worst possible scenario
- The best possible scenario
- The most likely scenario.

4- How is the term model used in this course? What are the advantages and disadvantages of modeling? What are the different types of models?

A *model* is a simplified representation or abstraction of reality. Reality is generally too complex to copy exactly. Much of the complexity is actually *irrelevant* in problem solving. Models are the major Component of DSS.

Modeling enable us to solve problems in short time with little cost.

Disadvantages bad model(due to many and wrong assumptions) may lead to inaccurate results and inaccurate solution for the problem under consideration.

Types of models:

- Iconic (Scale or physical) Model: Physical replica of a system (three dimensional models)
- Analog (schematic) Model behaves like the real system *but* does *not* look like it (symbolic representation)(two-dimensional charts or diagrams). They

can be physical models, but the shape of the model differs from that of the actual system

- Mathematical (Quantitative) Models use mathematical relationships to represent complexity.

Mathematical (Quantitative) Models used in most DSS analyses.

- 5- *List and explain Simon's four phases of decision making.*
- 6- *Compare between normative and descriptive models.*
- 7- *Mention the search approaches used in finding an appropriate solution to a problem model.*

Answer:

- *analytical techniques (solving a formula),*
- *algorithms (step-by-step procedures),*
- *heuristics (use experiments, trial and error methods)*
- *blind search (shooting in the dark with no information about environment, ideally in a logical way).*

- 8- *Explain Vague boundaries.*

Vague boundaries:

Elements play great role in implementation phase of decision making.

After putting a recommended solution for a problem, the implementation phase involves putting this recommended solution into work which is affected with the following elements:

- *Resistance to change.*
- *Degree of top management support.*
- *Users' roles and involvement in system development.*

– *Users' training.*

- 9- You are about to decide whether to drive to work via the freeway or via the parallel road. There is no immediate traffic information. Is your decision under certainty ? risk? Uncertainty? Why?

Solution: our decision is Risky because we know history of traffic on these roads but we do not know the immediate traffic information. Accident may be happened or road work may be exist which makes our decision risky. but if we do not know any information about traffic on these roads in this case our decision will be under uncertainty.